



# Table of Contents

**1**

Children Now,  
Comments,  
March 27, 2000

**2**

Consumer Federation of America,  
Comments,  
March 27, 2000

**3**

League of United Latin American Citizens,  
Comments,  
March 27, 2000

**4**

National Association of the Deaf,  
Recommendations,  
October 1999

**5**

1

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of  
Public Interest Obligations  
Of TV Broadcast Licensees

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MM Docket No. 99-360

**Comments of  
CHILDREN NOW**

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## **TABLE OF CONTENTS**

<b>I. INTRODUCTION .....</b>	<b>1</b>
A. THE STATE OF THE NATION’S CHILDREN.....	2
B. CHILDREN & THE ADVISORY COMMITTEE ON THE PUBLIC INTEREST OBLIGATIONS OF DIGITAL TELEVISION BROADCASTERS .....	4
C. THE FEDERAL COMMUNICATIONS COMMISSION’S NOTICE OF INQUIRY .....	5
<b>II. DTV’S TECHNOLOGICAL ADVANCES &amp; CHILDREN.....</b>	<b>6</b>
A. ENHANCED AUDIO-VISUAL QUALITY .....	8
B. MULTICASTING.....	11
C. MULTIPLEXING – ANCILLARY & SUPPLEMENTARY SERVICES.....	14
D. DIGITAL VIEWER EXPERIENCE QUALITY (DVEQ) & BANDWIDTH MANAGEMENT.....	19
<b>III. THE CHILDREN’S TELEVISION ACT.....</b>	<b>20</b>
A. BACKGROUND .....	20
B. THE CHILDREN’S TELEVISION ACT OF 1990.....	23
C. THE CHILDREN’S TELEVISION ACT—MORE STRINGENT RULES.....	25
D. THE THREE-HOUR RULE: IS IT LIVING UP TO ITS EXPECTATIONS?.....	25
E. THE THREE-HOUR RULE: INSIDERS’ REACTIONS .....	27
F. LOCAL OBSERVATIONS RELEVANT TO THE CHILDREN’S TELEVISION ACT.....	28
G. MANDATING RULES IN A NEW DIGITAL ERA .....	31
<b>IV. ANALYSES &amp; RECOMMENDATIONS.....</b>	<b>32</b>
A. MINIMUM PUBLIC INTEREST OBLIGATIONS SHOULD BE SPECIFIC.....	32
B. SERVING THE NATION’S CHILDREN .....	33
1. <i>The Children’s Television Act in Digital</i> .....	33
a. The Digital Three-Hour Rule for E/I Programming: Proportional Hours Requirement.....	34
b. The Digital DVEQ Rule for E/I Programming: Proportional DVEQ Requirement.....	35
c. Pay or Play Model.....	36
d. Diversity of Programming.....	39
e. Ratings and the V-Chip .....	42
f. Commercials .....	44
2. <i>Additional Opportunities and Obligations</i> .....	46
3. <i>Children’s Privacy &amp; Protection on DTV</i> .....	47
C. DISCLOSURE REQUIREMENTS .....	48
D. DIVERSITY .....	50
<b>APPENDICES (A-J)</b>	

## I. INTRODUCTION

Children Now, in association with the national coalition People for Better TV, hereby submit the following comments in response to the *Notice of Inquiry* (hereinafter, “*Notice*”) in the above-captioned proceeding that was released on December 20, 1999. Children Now commends the Commission for opening this inquiry into the public interest obligations of television broadcast licensees as the revolutionary transition from analog to digital television (“DTV”) technology begins. The implications of this transition and its effects on the American public, particularly America’s children, are unprecedented.

These comments will begin by exploring the particular importance of children’s issues for this FCC inquiry, the Advisory Committee’s recommendations regarding children’s programming in the digital era, and the specific FCC requests that we will address. The second section will examine the DTV technological advances that will impact children most significantly during the transitional period. The third section will assess the Children’s Television Act of 1990 and its impact on current programming. Finally, we present a set of recommendations regarding areas of DTV broadcasting that will affect children. These recommendations are starting points for further research and analysis, and should be considered for future rule-making. Children Now joins People for Better TV in their request for a rule-making proceeding and hearings to determine specifically the public interest obligations of digital broadcasters.<sup>1</sup>

These comments benefit from a series of discussions that Children Now has undertaken since the beginning of 2000. This series includes conversations with leading academics, advocates, and industry professionals, regarding their general opinions of

DTV public interest obligations and children.<sup>2</sup> We will continue this important process with a formalized schedule of interviews and meetings throughout the rule-making process to obtain the highest level of relevant expertise.

### **A. The State of the Nation's Children**

Officials recognize that the meaning of the public interest will change – indeed, must change – in a new communications environment in which viewers rather than programmers choose what to watch and when, and in which viewers may one day even produce and distribute programs themselves. There are few firm points of agreement on how this new communications environment should be structured or whom it should serve . . . But everyone everywhere can agree on one precept: the public interest requires us to put our children first.<sup>3</sup>

The FCC's *Notice* presents several important areas of inquiry with sub-headings such as "Disclosure Obligations," "Disaster Warnings," "Disabilities," "Diversity," and "Enhancing Political Discourse."<sup>4</sup> While the obligations regarding children's programming do not have their own category, the FCC does request comments on how digital broadcasters may serve the nation's children.<sup>5</sup>

Considering that America's children currently consume the equivalent of a full-time work week using media that digital television will provide, they may be one of the most vulnerable and needy populations with respect to the digital transition.<sup>6</sup> First,

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<sup>1</sup> See People for Better TV, Petition for Rulemaking and Petition for Notice of Inquiry (filed June 3, 1999) (PBTv Petition); Letter from People for Better TV to William E. Kennard, Chairman, FCC, Nov. 16, 1999 (PBTv Letter).

<sup>2</sup> Children Now has conducted informal and exploratory conversations with experts such as: Ms. Peggy Charren (Founder, Action for Children's Television), Professor Katharine Heintz-Knowles (children's media consultant), Professor Amy Jordan (Annenberg School for Communications, University of Pennsylvania), Professor Dale Kunkel (University of California, Santa Barbara), Professor Donald Roberts (Stanford University), Ms. Marjorie Tharp (American Academy of Pediatrics), and Dean Ellen Wartella (University of Texas). The comments of these participants have been incorporated into this statement where appropriate.

<sup>3</sup> Minow, Newton and Craig LaMay, *Abandoned in the Wasteland: Children, Television, and the First Amendment* 14 (1995).

<sup>4</sup> See *Notice* at ¶¶ 15, 18, 24, 29, and 34.

<sup>5</sup> *Id.* at ¶ 12.

<sup>6</sup> Henry J. Kaiser Family Foundation, *Kids and Media at the New Millennium (Executive Summary)* at 6 (Nov. 1999) ("The average child spends about five and a half hours a day using media (5:29) – more than 38 hours a week.").

broadcast content designed for children is scarce and often of low quality.<sup>7</sup> Parents continually search for and request more quantities of higher quality programming for their children.<sup>8</sup> As recently as 1999, the Journal of Broadcasting & Electronic Media published a survey of parents regarding the Children's Television Act of 1996 and the Educational/Informational ("E/I") programming requirements. Although 63% of parents had not heard of the E/I requirements, 82% of parents either "somewhat favored" or "strongly favored" them, and 79% thought that the E/I programming would do "some" or "a lot" of good for children.<sup>9</sup> Parents and caretakers of America's young people are asking for better content for kids, and more of it.

Further, the ancillary and supplementary services that DTV broadcasters can provide, such as datacasting, paging, or interactivity, raise the specter of privacy and protection concerns that have haunted children's policy in the Internet arena for the past several years.<sup>10</sup> Once again, the enhanced capabilities to inquire, target, and collect data from consumers present unparalleled financial opportunities for businesses and unparalleled risks for the public, especially children. These concerns will be both magnified and immediate if the DTV convergence reaches a critical mass.

Finally, the next decade will host a DTV dialogue between government, broadcasters, federal agencies, business, and the public that is filled with technical

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<sup>7</sup> Center for Media Education, *Digital TV in the Public Interest (op-ed)*, (last visited Nov. 2, 1999) <[http://www.cme.org/dtv\\_in.htm](http://www.cme.org/dtv_in.htm)>. See also, Part III.F, *infra* (recent observations regarding local broadcasting from People for Better TV members). [Please note that these comments refer to several leading Internet sites that contain the most current research regarding digital television.].

<sup>8</sup> See, e.g., Walsh, Ann, et al., *Mothers' Preferences for Regulating Children's Television*, J. of Advertising 23 *passim* (No.3, Vol.27, Sept. 22, 1998).

<sup>9</sup> J. of Broadcasting & Electronic Media, September 22, 1999.

<sup>10</sup> See Federal Trade Commission, *New Rule Will Protect Privacy of Children Online*, (released Oct. 20, 1999); Children's Advertising Review Unit, *Statements Re: Workshop on Proposed Regulations Implementing the Children Online Privacy Protection Act (July 20, 1999)*, July 30, 1999; Ian Auston, *But*



questions, transition timelines, price points, market penetration, and extraordinary advances. Perhaps the greatest vulnerability for America's children is the risk of being eclipsed amidst the unprecedented technology and endless commercial opportunities. Thus, it is everybody's duty to realize the unprecedented and endless opportunities that we have to make the digital world a better place for children.

### **B. Children & the Advisory Committee on the Public Interest Obligations of Digital Television Broadcasters**

In 1997, Vice President Gore and the Office of the President convened an Advisory Committee to explore the public obligations of digital television broadcasters, which resulted in a comprehensive final report with broad recommendations for the FCC.<sup>11</sup> The Committee addressed the concerns of children and children's programming at several points throughout its report, including a history of the Children's Television Act and the public mandate for broadcasters to serve the nation's children.<sup>12</sup> The Advisory Committee made the following specific recommendations: data about children's and educational programming should be included in broadcasters' quarterly disclosures of public interest activities; digital stations must determine or ascertain a community's needs and interests regarding children's programming as part of their minimum public interest requirements; the FCC should reserve the equivalent of one 6 MHz channel in each viewing area from recovered analog spectrum for noncommercial

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*First, Another Word from our Sponsor*, N.Y. Times, Feb. 18, 1999, at D1; Jamie Beckett, *Kids Tell All Online*, S.F. Chron., Sept. 22, 1998, at C1.

<sup>11</sup> See Executive Order No. 13038, §2, 62 Fed. Reg. 12,065 (1997).

<sup>12</sup> Advisory Committee on Public Interest Obligations of Digital Television Broadcasters, *Charting the Digital Broadcasting Future: Final Report of the Advisory Committee on the Public Interest Obligations of Digital Television Broadcasters* at §II, *The Public Interest in Children's Educational Programming* (1998) [hereinafter *Advisory Committee Report*] (discussing the *Children's Television Report and Policy Statement*, 50 FCC 2d 1, 5 (1974) and *Action for Children's Television v. FCC*, 564 F.2d 458, 465 (D.C. Cir. 1977), "It seems to us that the use of television to further the educational and cultural development of

educational programming, including children’s education; fee collection from multiplexing should be used to produce and air educational programming that would otherwise not be commercially feasible; broadcasters should datacast educational programming from preschool through higher education and public school information; and broadcasters should have the option of a “pay-or-play” model of public interest obligations where collected monies would be applied to children’s programming.<sup>13</sup>

Children Now is encouraged by the Advisory Committee’s thoughtfulness regarding how to serve the nation’s children in the digital era, and we have analyzed and incorporated some of its recommendations and principles into these comments.

### **C. The Federal Communications Commission’s Notice of Inquiry**

The FCC *Notice* invites discussion and proposals addressing “whether and how existing public interest obligations should translate to the digital medium.”<sup>14</sup> Specifically, the FCC is requesting comments on how both analog and digital broadcasters must operate consistently in the public interest during this lengthy transition period from analog to digital.<sup>15</sup> Children Now’s comments will address the following requests, with a focus on children and children’s programming:

- How can broadcasters serve the nation’s children in the digital environment?

(*Notice* at ¶12);

- Do a licensee’s public interest obligations apply to its ancillary and supplementary services? Should broadcaster activities on ancillary and

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America’s children bears a direct relationship to the licensee’s obligations under the Communications Act to operate in the ‘public interest.’”).

<sup>13</sup> Advisory Committee Report at §§III.1, III.3, III.4(b) (“The opportunity for digital television to improve student achievement has extraordinarily high stakes for our Nation . . . We put our children at a competitive disadvantage in the global economy if we do not invest wisely in educational resources.”), III.4.c, III.5,

<sup>14</sup> *Notice* at ¶10.

<sup>15</sup> *Id.* at ¶8.

supplementary services count toward the public interest obligations? (*Notice* at ¶13);

- What information should be included in the public files of digital broadcasters? Do the FCC's reasons for eliminating the previous ascertainment requirements apply to the proposals for rule-making for the digital era? (*Notice* at ¶16);
- How can broadcasters use the Internet and similar capabilities through DTV to ensure that they are responsive to the needs of the public? (*Notice* at ¶17);
- Should the Commission establish more specific minimum requirements or guidelines regarding television broadcasters' public interest obligations? If so, how should these requirements be defined and communicated to licensees? (*Notice* at ¶22);
- How can broadcasters use "multicasting" and other new technologies associated with DTV to enhance access to the media by all people, particularly people from diverse and underrepresented backgrounds? What other ways could and should the Commission encourage diversity in broadcasting, consistent with relevant constitutional standards? (*Notice* at ¶¶23, 33).

## II. DTV'S TECHNOLOGICAL ADVANCES & CHILDREN

In 1997, the federal government allocated an additional 6 MHz bandwidth to every existing broadcaster as part of a giveaway valued at approximately \$70 billion.<sup>16</sup> This authorization was the first step in a comprehensive digital conversion plan, targeted for completion by 2006. Toward that goal, the FCC issued a timetable for digital

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<sup>16</sup> Federal Communications Commission, *Digital Television Tower Siting Fact Sheet and Frequently Asked Questions* (last modified June 18, 1998) <<http://www.fcc.gov/mmb/prd/dtv/>> at introduction, Question 25

broadcasting, requiring all stations affiliated with ABC, CBS, NBC, and Fox in the top 10 markets to begin at least one digital broadcast by May 1, 1999. A second deadline was set for markets 11-30 by November 1, 1999.<sup>17</sup> Thus currently, broadcasters have two sets of bandwidth to use: (i) their original analog bandwidth, and (ii) the additional 6 MHz designated for digital conversion. As the transition progresses, the FCC has determined that broadcasters must return the bandwidth currently used for analog broadcasting when the conversion reaches its completion point (i.e., spectrum recovery). Correspondingly, the FCC and Congress have asserted that portions of these returned bandwidths will be designated for public uses such as public safety and police and fire department needs.<sup>18</sup> Although 2006 is the hard deadline originally established by the FCC, the completion point for digital conversion has been debated by broadcasters who have cited numerous time-sensitive obstacles such as tower construction and local zoning. Through a series of FCC inquiries and hearings, a compromise has been reached, setting a modified deadline of 2006 unless one or more of the largest television stations in a market do not begin DTV transmission through no fault of their own or there is less than 85% market penetration.<sup>19</sup> In any case, complete conversion is scheduled to arrive, shepherded by both government and industry.

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[hereinafter FCC, *Digital Television Tower*]; People for Better TV, *Here Comes Digital TV* (last visited March 13, 2000) <<http://www.bettertv.org/digital.html>>.

<sup>17</sup> FCC, *Digital Television Tower*, *supra*, at introduction.

<sup>18</sup> FCC, *Digital Television Tower*, *supra*, at introduction, Questions 4-5; Andy Carvin, Corporation for Public Broadcasting, *Digital Television: A New Tool for Education?* (Oct. 30, 1998) (last visited February 22, 2000) <<http://edweb.gsn.org/teled98/speech.html>> [hereinafter Carvin & CPB].

<sup>19</sup> Advisory Committee Report at §I, *How Digital Television Will Evolve: The Plan*. See also FCC, *Digital Television Tower*, *supra*, at introduction, Questions 12-13; Carvin & CPB, *supra*; Robert X. Cringely, Public Broadcasting Service, *Digital TV: A Cringely Crash Course* (last visited Mar. 2, 2000) <<http://www.pbs.org/opb/crashcourse/hdtv/timeline.html>> at § *Digital Broadcast Timeline* [hereinafter Cringely & PBS]; Digital Television: The Site, at § *What is Digital Television? Consumer Information Page* (last visited Mar. 2, 2000) <<http://www.digitaltelevision.com/what.shtml>>; National Association of Broadcasters and PricewaterhouseCoopers LLP, *Digital Television '99: Navigating the Transition in the US* (last visited Mar. 13, 2000) <<http://www.nab.org/Research/Reports/DIGITALTV.htm>> (“The DTV

Over the past few years, the media attention garnered by digital television has focused on DTV's enhanced audio-visual qualities and the high price points of viewer reception equipment.<sup>20</sup> While both issues have significant effects on the public, there are several other technological advances that have not reached mainstream consciousness but will impact the public in important ways.

For this comment, Children Now has identified three specific advances that will affect children and children's programming: (1) Enhanced Audio-Visual Quality; (2) Multicasting; (3) Multiplexing – Ancillary & Supplementary Services. Further, these three advances combine to provide an overall digital viewer experience; the variability of this experience due to individualized bandwidth management is a separate and specific area of concern. In this section, Children Now presents each advance along with its opportunities to improve our public obligations to children and its risks that children will be overlooked for technology and business.

#### **A. Enhanced Audio-Visual Quality**

Most of the attention surrounding DTV has concerned the leap in audio-visual ("A/V") effects, presenting a television experience unlike any before. Digital broadcasting will provide the clearest pictures with realistic sound, and will eliminate the reception problems commonly associated with analog television.<sup>21</sup> Whereas previously, analog broadcasts offered a standard NTSC (National Television Systems Committee)

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transition will take longer than most people in the industry will publicly admit . . . at least 10 to 12 years – or even longer. This period is much lengthier than the original timetable established by the US Congress.") [hereinafter NAB & PricewaterhouseCoopers LLP].

<sup>20</sup> See, e.g., Federal Communications Commission, *Digital Television* (description) (last modified Nov. 2, 1999) <<http://www.fcc.gov/mmb/vsd/files/descrip.html>>; Wendy Tanaka, *The DTV Industry is Growing Slowly*, Philadelphia Inquirer, Feb. 10, 2000 (page unavailable); *A Technophobe's Guide to HDTV*, Daily Variety, April 6, 1998, at A2.

screen with 4-to-3 aspect ratio and 525 lines of 720 pixels that totaled 378,000 pixels per frame, the newer digital technology can present a standard ATSC (Advanced Television Systems Committee) screen with 19-to-9 ratio and up to 1080 lines of 1920 pixels for 2,073,600 pixels per frame.<sup>22</sup> This picture is commonly referred to as high-definition television (“HDTV”).<sup>23</sup> Correspondingly, the sound quality of television will also improve dramatically from mono and stereo to 5.1 Dolby Digital surround sound and the digital quality currently found in compact discs.<sup>24</sup> Thus, there is a hierarchy of A/V quality, ranging from the existing low-quality analog transmission (NCTE) to middle-quality SDTV digital transmissions to high-end HDTV. While not every broadcast in the digital era will be of the highest possible quality, all broadcasts will be of higher quality than analog transmission.<sup>25</sup> The FCC mandate requires some amount of broadcasting in a higher quality format beginning in 1998 and increasing in quantity until complete conversion.

Children Now urges the FCC to be cognizant of the opportunities and risks for children that enhanced A/V capabilities present. First, the higher A/V quality can provide children with greater educational experiences through television. For example,

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<sup>21</sup> See Advisory Committee Report at §I, *A Brief History of Digital Television Technology* (discussing progressive scanning, square pixels, increased frame rates additional lines per frame, different aspect ratios, and sound); Cringely & PBS, *supra*, at § *Ghosts in the Machine*.

<sup>22</sup> Advisory Committee Report at §I, *A Brief History of Digital Television Technology*; Cringely & PBS, *supra*, at § *Bandwidth Squeeze*; Pat Denato, *Future of TV's is Here – Digital and High-Definition TVs Will Put Viewers in Control and Provide Better Sound and Quality*, Des Moines Register, May 17, 1999, at 16.

<sup>23</sup> See Allison Ballard, *The Defining Moment of Television: The Conversion to Digital TV Will Cost Networks and Consumers Big Bucks*, Morning Star, Feb. 17, 2000, at 1D, 3D (“One common confusion with the new technology is the terminology. Digital television is a way to transmit television. HDTV, or high-definition television, is one application of digital television.”).

<sup>24</sup> Cringely & PBS, *supra*, at § *Digital Sound*; Digital Television: The Site, *supra*, at § *What is Digital Television? Consumer Information Page*.

<sup>25</sup> FCC, *Digital Television Tower*, *supra*, at Questions 1-2 (“Standard definition digital TV pictures would be similar in clarity and detail to the best TV pictures being received and displayed today using the current (analog NTSC) broadcast system and TV receivers.”); *A Technophobe's Guide to HDTV*, Daily Variety, April 6, 1998, at A2.

science programs or travelling shows will be able to present people, places, and things through more realistic pictures and sounds than ever before. While it is not yet certain how DTV will ultimately impact education, it is evident that the technology will have a significant and tangible effect with regard to engaging young viewers and encouraging further learning.<sup>26</sup> These effects and other enhancements are discussed further at Part II (C-D), *infra*.

Second, broadcasters will have the ability to vary the amount and quality of their programming menu throughout the day – e.g., airing lower A/V quality SDTV multicasting during early morning hours and higher A/V quality HDTV during prime-time.<sup>27</sup> The Advisory Committee on Public Interest Obligations of Digital Television Broadcasters (hereinafter, “Advisory Committee”) noted that there are 18 possible formats in HDTV and SDTV.<sup>28</sup> While this flexibility may provide more overall quantities of programming, it also risks having a segregation effect – i.e., certain programming receiving priority for high A/V quality (e.g., sports games, prime-time shows) while other programming is relegated to low A/V quality. Higher definition programming will necessarily require higher production costs, and broadcasters will often face the usual business efficiency decisions that rely heavily on viewership ratings and

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<sup>26</sup> See, e.g., Andy Carvin, *EDWEB: Exploring Technology and School Reform*, (latest revision Jan. 11, 2000) <<http://edweb.gsn.org>>, at § *DTV: Enhanced Television* <<http://edweb.gsn.org/teled98/enhancedtv.html>> (actual demonstrations of educational programs enhanced by DTV).

<sup>27</sup> See Part II.B, *infra*.

<sup>28</sup> Advisory Committee Report at §I, *A Brief History of Digital Television Technology* (citing FCC discussion that broadcasters have a variety of options and that the market will determine the ultimate decisions, in *In the Matter of Advanced Television Systems and Their Impact upon the Existing Television Broadcast Service*, MM Docket No. 87-268, *Fifth Report and Order*, *supra*, at 12826-27 [hereinafter *Fifth Report and Order*]).

advertising dollars.<sup>29</sup> Children Now urges the FCC to consider the risks and possibilities of excluding children's programming from the highest A/V quality broadcasting.

Third, the enhanced picture and sound will also mean a more realistic viewer experience with regard to images of sex and violence that may be inappropriate for young children.<sup>30</sup> Given the long-existing concerns in this area, Children Now urges the FCC to research and analyze the impact of enhanced A/V capabilities on children's consumption of such images.

Finally, more research and analysis is needed regarding the psychological and physical effects of enhanced A/V on viewers, especially children. In December, 1997, an episode of *Pokemon* that aired in Japan induced several hundred cases of photosensitive epileptic seizures.<sup>31</sup> Most of these cases involved children. More recently, experts have been exploring the effects of new technologies such as virtual reality for their capacity to induce physical illness in consumers.<sup>32</sup> As the digital conversion introduces technological advances that make home-viewing a more virtual experience, the FCC should conduct due diligence regarding its public health impact.

## **B. Multicasting**

Unlike traditional analog broadcasting, digital broadcasting uses a binary system of 1's and 0's to transmit high quantities of data in an extraordinarily compact form. This technology is currently used in platforms such as personal computers, compact disc

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<sup>29</sup> See Advisory Committee Report at §III.4.a ("The startup costs of converting to digital signals are high, and just as significantly, the costs of producing digital programming are 10 to 20 percent higher than those of comparable analog programming.").

<sup>30</sup> People for Better TV, *The Dangers of DTV*, (last visited Mar. 13, 2000) <<http://www.bettertv.org/dangers.html>>.

<sup>31</sup> See *Pokemon and Epilepsy*, Washington Post, Mar. 6, 2000, at A9; Kevin Sullivan, *Japan's Cartoon Violence; TV Networks Criticized After Children's Seizures*, Washington Post, Dec. 19, 1997, at D1; Sheryl Wu Dunn, *TV Cartoon's Flashes Send 700 Japanese Into Seizures*, N.Y. Times, Dec. 18, 1997, at A3.

<sup>32</sup> Katie Hafner, *Real Queasiness in Virtual Reality*, N.Y. Times, Nov. 19, 1998, at G1.



players, and the Internet. The benefits of such transmission through the television are manifold, such as picture perfect quality and Internet capabilities.<sup>33</sup>

Given the compression power of digital transmission, the additional 6 MHz of bandwidth granted to broadcasters represents more than a simple 100% increase in a station's programming capacity. While the additional bandwidth can provide one channel at the highest A/V quality (i.e., HDTV), it can also sustain several simultaneous channels at lower qualities (e.g., SDTV). This ability to broadcast multiple channels is called "multicasting." Multicasting essentially allows each current broadcaster to become its own mini-network, with an inverse relationship between the quantity of channels and the A/V quality on those channels.<sup>34</sup> At present, the common perception is that the additional 6 MHz can sustain up to 4-6 channels of SDTV transmission, thereby increasing the amount of available programming exponentially.<sup>35</sup> As the technology develops, the number of possible channels may increase even more.

The power of multicasting requires broadcasters to engage in what the National Association of Broadcasters terms "bandwidth management."<sup>36</sup> As previously discussed, broadcasters will have the flexibility to vary the amount and A/V quality of programming throughout the day. For example, local broadcaster WXYZ could design a Monday menu

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<sup>33</sup> See Cringely & PBS, *supra*, at §§ MPEG-2 (discussing the MPEG-2 compression scheme for digital transmission), *Ghosts in the Machine*. See also, Carvin & CPB, *supra* (explaining binary compression and associated benefits).

<sup>34</sup> See FCC, *Digital Television Tower*, *supra*, at Questions 2-3 ("There is a trade-off between using digital transmission capacity for improved pictures and sound and using it to transmit additional programs."); Center for Media Education, *supra* ("Initially, at least, the latter option [of SDTV multicasting] will be far more practical (given the scarcity of sets capable of displaying HDTV), which means that every local TV station will be able to control a 'mini-network' of its own."); Cringely & PBS, *supra*, at § *Multi-Casting*; Digital Television: The Site, *supra*, at § *SDTV Multicasting*.

<sup>35</sup> See, e.g., FCC, *Digital Television Tower*, *supra*, at Question 3; Cringely & PBS, *supra*, at § *Multi-Casting*; Advisory Committee Report at §I, *What is Digital Television?*

<sup>36</sup> NAB & PricewaterhouseCoopers LLP, *supra* ("As managers of bandwidth, they may adjust their broadcast product from multiple standard definition channels during the day and late night dayparts to high definition programming designed to reach a broad, mass audience during prime time.").

that airs four SDTV channels from 8 a.m. to 3 p.m., switches to two higher definition channels from 3 p.m. to 8 p.m., and finishes with one HDTV channel for prime-time and late-night programming. Then, WXYZ could change its amounts and quality for the Tuesday.<sup>37</sup> Further, WXYZ may choose to hold a special pay-per-view HDTV broadcast for a sporting event, in lieu of its scheduled multicast segment. In any case, digital technology and the bandwidth giveaway have granted broadcasters an enormous amount of power and flexibility, and they must manage the station schedule for optimal performance.

This model of variability raises several serious concerns for children's E/I programming. In addition to the A/V quality concerns raised in Part II.A, *supra*, the overall amount and weekly proportion of children's programming may be threatened. Multicasting capability de-standardizes the amount of programming across broadcasters. Whereas previously there was a relatively constant set of programmable hours for each broadcaster, the new digital regime will host myriad combinations and permutations of hours and A/V quality. Every broadcaster in America can and probably will provide a different combination with different overall hours and quality.<sup>38</sup> Thus the previous hard-fought rule for three hours of Educational/Informational children's programming per week may suffer drastically – what was previously three hours of E/I programming per 105 hours of effective weekly broadcasting<sup>39</sup> may become three hours per 1000 hours.

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<sup>37</sup> Advisory Committee Report at §I, *What is Digital Television?* ("Within a single programming day, a broadcaster will have the flexibility to shift back and forth between different DTV modes in different day parts.").

<sup>38</sup> See NAB & PricewaterhouseCoopers LLP, *supra* ("One new benefit of the digital format is the ability to apply compression and vary the mix of digital content, broadcasting one program in high definition (HDTV) or several in standard definition (SDTV). Broadcasters will have a broad range of channel options in their business mix."). These variations in quality are explored in more detail at Part II (C-D), *infra*.

<sup>39</sup> Currently, children's E/I programming must air between 7 a.m. and 10 p.m. which is a 15-hour period for each day. Seven days of 15 programmable hours totals 105 hours per week.

As the Advisory Committee notes, “Applying existing public interest obligations to this variegated universe will not be easy, *and will certainly not entail a simple one-for-one exchange.*”<sup>40</sup> Given these risks, Children Now believes that it is of utmost importance for the FCC to examine the public interest obligations under the Children’s Television Act, especially the Three-Hour Rule, as they will apply to the digital era. We provide a set of recommendations addressing this requirement at Part IV, *infra*.

### **C. Multiplexing – Ancillary & Supplementary Services**

The FCC *Notice* and the Telecommunications Act of 1996 characterize DTV services such as datacasting, paging, and interactivity as “ancillary and supplementary.”<sup>41</sup> These services may be offered by themselves or in conjunction with broadcast programming, and broadcasters will manage their bandwidth distribution accordingly. The transmittal of DTV programming and ancillary and supplementary services at the same time is termed “multiplexing.”<sup>42</sup>

DTV’s ancillary and supplementary services are closely related to the futurist concept of “convergence,” whereby the many discrete pieces of technical hardware in use today – such as personal computers, Internet, video gaming consoles, fax/modems, broadcast radio and television, cellular communications, cable – will merge into one platform.<sup>43</sup> Convergence raises several new policy concerns with respect to children, many of which have been previously addressed separately within their respective media

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<sup>40</sup> Advisory Committee Report at §III.10 (emphasis added).

<sup>41</sup> *Notice* at ¶13 (“... services other than free, over-the-air services.”); *Fifth Report and Order*, *supra*, at 12821, ¶30; Advisory Committee Report at §I, *What is Digital Television?*

<sup>42</sup> *Notice* at ¶10; *Fifth Report and Order*, *supra*, at 12826, ¶42. See Carvin & CPB, *supra* (“The last – and perhaps most important – difference with digital and analog TV is that DTV will allow you to combine TV signals with other types of digital content.”). Note that broadcasters who transmit multiple programming channels and ancillary and supplementary services at the same time, are multicasting *and* multiplexing.

(e.g., Children's Television Act for television, Children's Online Privacy Protection Act for Internet marketing, parental advisory labels for music). Technological advances toward convergence will necessarily expedite the need and timeline for solutions and applications.<sup>44</sup> While Children Now urges the FCC to look to those discrete policy solutions for guidance, we also recognize the need to explore new solutions specific to convergence and DTV.

Although the full capacity of ancillary and supplementary services has not been determined, commentators are clearly aware of their enormous potential and opportunities.<sup>45</sup> Digital technology is currently utilized in personal computers and on the Internet to provide large amounts of data and to interact with users. DTV broadcasters have the capacity to use a portion of their 6 MHz bandwidth to provide similar services, currently characterized broadly as "datacasting" and "interactivity."

Datacasting is providing data via the DTV bitstream.<sup>46</sup> Any information that can be coded in the binary scheme of 1's and 0's can be transmitted, such as stock quotes, product prices, computer software, closed captioning, database content, weather animation, sports scores, Internet content, interactive educational material, multimedia

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<sup>43</sup> See Advisory Committee Report at §I, *What is Digital Television?*; Cringely & PBS, *supra*, at § *What's on the TV?* ("The convergence of television and computers is going to take a major step with digital broadcasts.").

<sup>44</sup> For example, commentators have noted that the issues of violence, pornography, and privacy on the Internet are affecting increasingly larger populations. See, e.g., Paul Van Slambrouck, *New Computer Chip: Useful Tool or Privacy Invasion?*, The Christian Science Monitor, Feb. 16, 1999, at 2. If DTV and its convergence narrow the Digital Divide by lowering the entry price points for Internet connection, then those issues affect a far greater population than before and become much more urgent.

<sup>45</sup> See Cringely & PBS, *supra*, at § *I Want My Enhanced TV* ("Nobody really knows how we'll interact with our televisions in the next few years, but TV is never going to be the same."); NAB & PricewaterhouseCoopers LLP, *supra* ("The concept of data broadcasting is still in its infancy; however, there are a number of entrepreneurial companies ready to exploit the business opportunities offered by a true point-to-multipoint data push model," and "The prevailing DTV Format will be an HDTV Multicasting hybrid – but the Killer App will be datacasting combined with two-way interactivity.").

<sup>46</sup> Notice at ¶13.

games, or illustrated articles.<sup>47</sup> Selecting personalized data will be a function of user interaction with the television. User interactivity through the television has been attempted previously with costly external network connections, but digital television will “embed interactivity inside the broadcast signal,” resulting in low costs.<sup>48</sup> Viewers will be able to communicate with the television and with others through the television, creating a more personalized and potentially educational experience.<sup>49</sup>

DTV datacasting and interactivity offer significant opportunities and risks for children. Many digital commentators have envisioned how DTV enhancements may improve television viewing, including programming for children. For example, viewers watching a documentary on dinosaurs could download additional information on certain species or the biography of a scientist on the program.<sup>50</sup> The PBS website describes possibilities such as watching a lifelike documentary on National Parks in Africa with “amazing clarity” and 5.1 channel sound, followed by personalized news programming that presents your stocks, weather, sports scores, and interest pieces, followed by E/I programming where, “You and your kids play some learning games with Big Bird, replay the sing-along a few times, and then print out a picture for coloring together. Your kids

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<sup>47</sup> See Advisory Committee Report at §§I, *What is Digital Television?* (“... digital code, which is increasingly becoming the common language for all electronic media.”), III.4(c); Cringely & PBS, *supra*, at § I *I Want My Enhanced TV*; FCC, *Digital Television Tower*, *supra*, at Question 2; People for Better TV, *The Potential Benefits of DTV*, *supra*. Current television programs that approximate this multiplexing vision include financial shows with the NYSE ticker tape and MTV’s *Total Request Live* with e-mail input from viewers.

<sup>48</sup> Cringely & PBS, *supra*, at § *The Experiments* (describing experiments in the 1980s conducted by TCI and Time Warner, where subscribers could “shop online, play games with people across town, and do a lot of the things we dreamed an interactive TV should offer.”).

<sup>49</sup> *But see*, Carvin & CPB, *supra* (describing possible limits with DTV interactivity due to lack of a back channel similar in quality to DTV broadcast; in the interim, Carvin predicts that the Internet will be the user upstream channel and will provide some interactivity, albeit at slower rates than incoming data). *See also*, Advisory Committee Report at §III.4.c (discussing important interactive aspects that combines television broadcasting and the Internet).

<sup>50</sup> Ballard, *supra*, at 3D.

are learning by doing.”<sup>51</sup> People for Better TV conjectures that DTV may make it possible for “a child in West Virginia to talk to an astronaut aboard a space station.”<sup>52</sup> Benton Foundation DTV pundit Andy Carvin, formerly of the Corporation for Public Broadcasting, presents detailed examples and actual experiments of enhanced TV applied to education, from PBS documentaries on Henry V and Frank Lloyd Wright supplemented by multimedia content, to a NOVA special where children can construct virtual Stonehenges or pyramids, to a Great Performances program where children can isolate instruments and rearrange music.<sup>53</sup> Carvin also identifies the possibilities for teacher professional development through DTV.<sup>54</sup> Through technological advancements, DTV can expand greatly the educational mission of public television.<sup>55</sup>

Another pivotal opportunity lies in DTV’s ability to affect the Digital Divide.<sup>56</sup> While the majority of Americans do not currently have Internet connectivity at home, most Americans do have television set. Because DTV can broadcast websites and other multimedia content without high-speed Internet connectivity, DTV is able to bring the Internet to millions of people at home or in institutions such as schools, through the purchase of DTV tuner PC cards, set-top boxes, or digital televisions.<sup>57</sup> However, the Digital Divide cannot be overcome unilaterally. Although the content provider end of Internet services will be able to send digital data through free broadcast airwaves, end-users still require new hardware to receive. The actual closure of the divide will depend

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<sup>51</sup> Cringely & PBS, *supra*, at § *The Many Faces of HDTV*.

<sup>52</sup> People for Better TV, *The Potential Benefits of DTV*, (last visited Mar. 13, 2000) <<http://www.bettertv.org/benefits.html>>.

<sup>53</sup> Carvin & CPB, *supra*.

<sup>54</sup> *Id.*

<sup>55</sup> Ballard, *supra*, at 3D.

<sup>56</sup> For more information regarding the Digital Divide, *see generally*, The Digital Divide Network, (last visited March 23, 2000), <<http://www.DigitalDivideNetwork.org>>.

<sup>57</sup> Carvin & CPB, *supra*.

on the price points for conversion (i.e., whether it will be financially accessible to a greater population) and overcoming relevant biases.<sup>58</sup> Nonetheless, as the government and broadcasting industry urge convergence on the DTV platform, a massive conversion may result simply because current television owners will not forego their basic television services as they currently forego the Internet. The externality of making people buy digital televisions to get basic television would be closing the current Internet divide. In any case, DTV's actual effect on the Digital Divide remains to be determined as technology, market economics, politics, and policy continue to develop.

Exclusion from enhancement, personalized commercialization, and invasions of privacy are some of the primary risks for children regarding datacasting and interactivity services. Just as DTV has the opportunity to enhance children's education and close the Digital Divide, there is the converse risk that children's programming will be excluded from higher-end services and that lower-income populations will not receive DTV. Further, as DTV becomes interactive and personalized, companies will collect more information about viewers and can customize integrated advertising and direct marketing within programming. Just as today's Internet marketers can track user movements and purchases, convergence will enable marketers to monitor viewer's program choices and behavior with enhanced information-gathering techniques. This will result in commercials that can address the viewer – especially children – directly and intimately,

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<sup>58</sup> Advisory Committee Report at §I, *Consumer Demand for DTV*. For price point concerns, see, e.g., Joel Brinkley, *HDTV: High in Definition, High in Price*, N.Y. Times, August 20, 1998, at G1; *A Technophobe's Guide to HDTV*, Daily Variety, April 6, 1998, at A2 (describing digital television priced from \$7,000 to \$10,000, and lower quality converter boxes at approximately \$100). For relevant biases, see, e.g., J. Raloff, *Internet Access: A Black-and-White Issue*, Science News, Apr. 18, 1998, at 247.

aggressively urging purchases.<sup>59</sup> Children Now addresses these risks at Part IV.B(3), *infra*.

Children Now urges the FCC to consider the opportunities for fuller and richer children's education through the affirmative allocation of bandwidth to datacasting and interactivity to children's programming. We also urge the FCC to consider the risks associated with possible exclusion from ancillary and supplementary services, and with personalized commercialization and advertising to young people. Finally, Children Now urges the FCC to monitor the actual effects of the DTV convergence on the current Digital Divide.

#### **D. Digital Viewer Experience Quality (DVEQ) & Bandwidth Management**

The upshot of these technological advances is that broadcasters will have a limited amount of bandwidth, but exponentially more power and flexibility than ever before. Technology has made the capacity of the 6 MHz bandwidth seemingly limitless. In the digital era, broadcasters have the phenomenal ability to vary the viewer's experience by allocating A/V quality, datacasting, interactive components, and multiple programming hours, in any combination or permutation that they wish. Overall bandwidth management will be more than simply channels and A/V quality.<sup>60</sup>

Throughout the pre-digital era, the public television viewing experience was mostly standard from channel to channel. Each broadcaster had an identical finite amount of programming hours per week and all broadcasts had the same analog A/V

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<sup>59</sup> People for Better TV, *The Dangers of DTV*, (last visited Mar. 13, 2000) <<http://www.bettertv.org/dangers.html>>; Center for Media Education, *supra*.

<sup>60</sup> See Carvin & CPB, *supra* ("There's no one single rule for utilizing DTV spectrum – broadcasters will have to figure out for themselves what method is best for them. But there are so many options: if you can take content and convert it to 1's and 0's, you'll be able to send that content through the DTV signal. It's just a matter of figuring out what kinds of content you'd want to transmit.").



quality. With DTV, the experience can range from a program similar to yesterday's analog broadcast to an 16:9, high-definition, multi-casting, surround-sound program enhanced with streaming datacast and interactive participation.<sup>61</sup> To quantify this range, Children Now introduces a variable entitled *Digital Viewer Experience Quality (DVEQ)* that refers to the different types of experiences that are now possible with DTV.

The primary concern with DVEQ and children is the exact same concern we have identified regarding multicasting, multiplexing, and the inverse relationship between quality and quantity – *Will children's programming become segregated at the low end of the quality spectrum?* Given the higher production costs associated with HDTV, datacasting, and interactivity, how much E/I programming will be broadcast in low-definition with nothing else? Will children's E/I programming be afforded the important opportunity to participate in advanced technology for expanded learning experiences, or will those technologies be designated exclusively for high profit margin ventures such as sporting events and pay-per-view events? Children Now urges the FCC to further consider these concerns regarding exclusion in its rule-making process.

### **III. THE CHILDREN'S TELEVISION ACT**

#### **A. Background**

Since the 1960's, children's advocates have urged the FCC to protect the public interest of children by mandating a minimum level of educational children's programming. Since then, an ongoing debate has ensued among broadcasters, Congress,

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<sup>61</sup> Advisory Committee Report at §I, *What is Digital Television?* ("Because different gradations of HDTV and SDTV picture resolution are possible – there are 18 different transmission formats – a station can mix and match video programming with data services, provided that the various signals fit within the 6 MHz bandwidth."); Cringely & PBS, *supra*, at § *The Many Facts of HDTV*.